Copyright. Papers accepted become the copyright of the journal © 1984 Blackwell Scientific Publications). Authorization to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Blackwell Scientific Publications Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the stated base fee of $02.00 per copy is paid directly to the CCC, 21 Congress Street, Salem, MA 01970, U.S.A. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Special requests should be addressed to the Editor. 0307-6962/84 $02.00.

Contents

VOLUME 9, NUMBER 1, MARCH 1984

A. N. CLEMENTS and M. R. BOOCOCK: Ovarian development in mosquitoes: stages of growth and arrest, and follicular resorption 1–8

KURT HANSEN: Discrimination and production of disparlure enantiomers by the gypsy moth and the nun moth 9–18

SUE C. KINNAMON, ANN E. KAMMER and ANTHONY L. KIORPES: Control of ventilatory movements in the aquatic insect *Corydalus cornutus*: central effect of hypoxia 19–28

ECKEHARD LISKE and WERNER MOHREN: Saccadic head movements of the praying mantis, with particular reference to visual and proprioceptive information 29–38

D. J. MERRITT and M. J. RICE: Innervation of the cercal sensilla on the ovipositor of the Australian sheep blowfly (*Lucilia cuprina*) 39–47

B. K. MITCHELL and GLENN D. HARRISON: Characterization of galeal chemosensilla in the adult Colorado beetle, *Leptinotarsa decemlineata* 49–56

B. K. MITCHELL and J. F. SUTCLIFFE: Sensory inhibition as a mechanism of feeding deterrence: effects of three alkaloids on leaf beetle feeding 57–64

DAVID C. POST and ROBERT L. JEANNE: Venom as an interspecific sex pheromone, and species recognition by a cuticular pheromone in Paper Wasps (*Polistes,* Hymenoptera: Vespidae) 65–75

K. N. SAXENA and H. KUMAR: Acoustic communication in the sexual behaviour of the leafhopper, *Amrasca devastans* 77–86

HAYWARD G. SPANGLER, MICHAEL D. GREENFIELD and ALEX TAKESSIAN: Ultrasonic mate calling in the lesser wax moth 87–95

SEIJI TANAKA: Seasonal variation in embryonic diapause of the striped ground cricket, *Allonemobius fasciatus* 97–105

JOACHIM THEISS and JOACHIM PRAGER: Range of corixid sound signals in the biotope 107–114

D. M. UNWIN and SARAH A. CORBET: Wingbeat frequency, temperature and body size in bees and flies 115–121

BOOK REVIEWS and BOOK NOTICES 123–124

VOLUME 9, NUMBER 2, JUNE 1984

E. I. ABDEL KARIM and JOHN BRADY: Changing visual responsiveness in pregnant and larvipositing tsetse flies, *Glossina morsitans* 125–131

E. BURSELL: Observations on the orientation of tsetse flies (*Glossina pallidipes*) to wind-borne odours 133–137

J. D. GILLETT: The effects of decapitation and the influence of size and sex on diuresis in newly emerged mosquitoes 139–144

M. O. HARRIS and J. R. MILLER: Foliar form influences ovipositional behaviour of the onion fly 145–155

I. J. HAVUKKALA and J. S. KENNEDY: A programme of self-steered turns as a humidity response in *Tenebrio,* and the problem of categorizing spatial manoeuvres 157–164

RICHARD A. HILLIARD and LARRY L. KEELEY: The effects of dietary nitrogen on reproductive development in the female boll weevil, *Anthonomus grandis* 165–174

Copyright. Papers accepted become the copyright of the journal © 1984 Blackwell Scientific Publications). Authorization to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Blackwell Scientific Publications Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the stated base fee of $02.00 per copy is paid directly to the CCC, 21 Congress Street, Salem, MA 01970, U.S.A. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Special requests should be addressed to the Editor. 0307-6962/84 $02.00.

Contents

VOLUME 9, NUMBER 1, MARCH 1984

A. N. CLEMENTS and M. R. BOOCOCK: Ovarian development in mosquitoes: stages of growth and arrest, and follicular resorption 1–8

KURT HANSEN: Discrimination and production of disparlure enantiomers by the gypsy moth and the nun moth 9–18

SUE C. KINNAMON, ANN E. KAMMER and ANTHONY L. KIORPES: Control of ventilatory movements in the aquatic insect *Corydalus cornutus*: central effect of hypoxia 19–28

ECKEHARD LISKE and WERNER MOHREN: Saccadic head movements of the praying mantis, with particular reference to visual and proprioceptive information 29–38

D. J. MERRITT and M. J. RICE: Innervation of the cercal sensilla on the ovipositor of the Australian sheep blowfly (*Lucilia cuprina*) 39–47

B. K. MITCHELL and GLENN D. HARRISON: Characterization of galeal chemosensilla in the adult Colorado beetle, *Leptinotarsa decemlineata* 49–56

B. K. MITCHELL and J. F. SUTCLIFFE: Sensory inhibition as a mechanism of feeding deterrence: effects of three alkaloids on leaf beetle feeding 57–64

DAVID C. POST and ROBERT L. JEANNE: Venom as an interspecific sex pheromone, and species recognition by a cuticular pheromone in Paper Wasps (*Polistes,* Hymenoptera: Vespidae) 65–75

K. N. SAXENA and H. KUMAR: Acoustic communication in the sexual behaviour of the leafhopper, *Amrasca devastans* 77–86

HAYWARD G. SPANGLER, MICHAEL D. GREENFIELD and ALEX TAKESSIAN: Ultrasonic mate calling in the lesser wax moth 87–95

SEIJI TANAKA: Seasonal variation in embryonic diapause of the striped ground cricket, *Allonemobius fasciatus* 97–105

JOACHIM THEISS and JOACHIM PRAGER: Range of corixid sound signals in the biotope 107–114

D. M. UNWIN and SARAH A. CORBET: Wingbeat frequency, temperature and body size in bees and flies 115–121

BOOK REVIEWS and BOOK NOTICES 123–124

VOLUME 9, NUMBER 2, JUNE 1984

E. I. ABDEL KARIM and JOHN BRADY: Changing visual responsiveness in pregnant and larvipositing tsetse flies, *Glossina morsitans* 125–131

E. BURSELL: Observations on the orientation of tsetse flies (*Glossina pallidipes*) to wind-borne odours 133–137

J. D. GILLETT: The effects of decapitation and the influence of size and sex on diuresis in newly emerged mosquitoes 139–144

M. O. HARRIS and J. R. MILLER: Foliar form influences ovipositional behaviour of the onion fly 145–155

I. J. HAVUKKALA and J. S. KENNEDY: A programme of self-steered turns as a humidity response in *Tenebrio,* and the problem of categorizing spatial manoeuvres 157–164

RICHARD A. HILLIARD and LARRY L. KEELEY: The effects of dietary nitrogen on reproductive development in the female boll weevil, *Anthonomus grandis* 165–174

SHULAMITH KRONENBERG and ABRAHAM HEFETZ: Role of labial glands in nesting behaviour of *Chalicodoma sicula* (Hymenoptera; Megachilidae) 175–179

MICHEL LAMBIN: Retinal scanning and visual inputs in freely walking crickets 181–190

PETER B. McEVOY: Increase in respiratory rate during feeding in larvae of the cinnabar moth *Tyria jacobaeae* 191–195

P. J. MORGAN and W. MORDUE: Diuretic hormone: another peptide with widespread distribution within the insect CNS 197–206

T. M. MUSTAFA and C. J. HODGSON: Observations on the effect of photoperiod on the control of polymorphism in *Psylla pyricola* 207–213

BRADFORD G. RENCE: A comparison of light and temperature entrainment: evidence for a multioscillator system 215–227

ROLF ZIEGLER and GERD GÄDE: Preliminary characterization of glycogen phosphorylase activating hormone and adipokinetic hormone from *Manduca sexta* corpora cardiaca 229–236

BOOK REVIEW and BOOK NOTICES 237–238

VOLUME 9, NUMBER 3, SEPTEMBER 1984

B. BACCETTI, A. G. BURRINI, G. GABBIANI and P. LEONCINI: Insect tracheal taenidia contain a keratin-like protein 239–245

PETER S. BAKER, MICHAEL GEWECKE and RICHARD J. COOTER: Flight orientation of swarming *Locusta migratoria* 247–252

ANN CLOAREC: Development of the compound eyes of the water stick insect, *Ranatra linearis* 253–262

W. E. CONNER and H. ITAGAKI: Pupal attendance in the crabhole mosquito *Deinocerites cancer:* the effects of pupal sex and age 263–267

ANTHONY P. DAVENPORT and PETER D. EVANS: Changes in haemolymph octopamine levels associated with food deprivation in the locust, *Schistocerca gregaria* 269–274

D. H. GODDEN and D. GRAHAM: A preparation of the stick insect *Carausius morosus* for recording intracellularly from identified neurones during walking 275–286

K. F. HAYNES and M. C. BIRCH: The periodicity of pheromone release and male responsiveness in the artichoke plume moth, *Platyptilia carduidactyla* 287–295

GERALD KASTBERGER: Gating of locomotor activity in the cave-cricket, *Troglophilus cavicola* 297–314

MASAMI SASAKI and LYNN M. RIDDIFORD: Regulation of reproductive behaviour and egg maturation in the tobacco hawk moth, *Manduca sexta* 315–327

Á. SZENTESI and E. A. BERNAYS: A study of behavioural habituation to a feeding deterrent in nymphs of *Schistocerca gregaria* 329–340

MARK A. WILLIS and THOMAS C. BAKER: Effects of intermittent and continuous pheromone stimulation on the flight behaviour of the oriental fruit moth, *Grapholita molesta* 341–358

BOOK REVIEWS and BOOK NOTICES 359–360

VOLUME 9, NUMBER 4, DECEMBER 1984

TADE A. ADEDOKUN and DAVID L. DENLINGER: Cold-hardiness: a component of the diapause syndrome in pupae of the flesh flies, *Sarcophaga crassipalpis* and *S.bullata* 361–364

T. C. BAKER, M. A. WILLIS and P. L. PHELAN: Optomotor anemotaxis polarizes self-steered zigzagging in flying moths 365–376

C. T. DAVID: The dynamics of height stabilization in *Drosophila* 377–386

J. B. FREE, A. W. FERGUSON and JACQUELINE R. SIMPKINS: Influence of immature queen honeybees (*Apis mellifera*) on queen rearing and foraging 387–394

W. G. FRIEND and J. G. STOFFOLANO, JR: Feeding responses of the horsefly, *Tabanus nigrovittatus,* to physical factors, ATP analogues and blood fractions 395–402

RACHEL GALUN, NAAMA OREN and M. ZECHARIA: Effect of plasma components of the feeding response of the mosquito *Aedes aegypti* L. to adenine nucleotides 403–408

JADWIGA M. GIEBULTOWICZ, BRONISLAW CYMBOROWSKI and JEAN P. DELBECQUE: Environmental control of larval behaviour and its consequences for ecdysteroid content and pupation in *Ephestia kuehniella* 409–416

RICHARD A. HILLIARD and LARRY L. KEELEY: Interactions between dietary nitrogen and simulated autumn conditions on diet consumption and reproductive development in the boll weevil, *Anthonomus grandis* 417–423

MASAHITO T. KIMURA: Geographic variation of reproductive diapause in the *Drosophila aurari* complex (Diptera: Drosophilidae) 425–431

D. PÉREZ and R. ROZAS: An inexpensive and reliable electroantennometer with automatic base line offset and drift canceller 433–436

M. W. SABELIS, J. E. VERMAAT and A. GROENEVELD: Arrestment responses of the predatory mite, *Phytoseiulus persimilis*, to steep odour gradients of a kairomone 437–446

MANDYAM V. SRINIVASAN and MIRIAM LEHRER: Temporal acuity of honeybee vision: behavioural studies using flickering stimuli 447–457

FRITZ TAYLOR and RONALD SCHRADER: Transient effects of photoperiod on reproduction in the Mexican bean beetle 459–464

R. M. M. TRAYNIER: Associative learning in the ovipositional behaviour of the cabbage butterfly, *Pieris rapae* 465–472

ANDREA P. WOODHEAD: Effect of duration of larval development on sexual competence in young adult male *Diploptera punctata* 473–477

BOOK REVIEW and BOOK NOTICES 479–480

Author Index

Abdel Karim, E.I. 125
Adedokun, T.A. 361
Baccetti, B. 239
Baker, P.S. 247
Baker, T.C. 341, 365
Bernays, E.A. 329
Birch, M.C. 287
Boocock, M.R. 1
Brady, J. 125
Burrini, A.G. 239
Bursell, E. 133
Clements, A.N. 1
Cloarec, A. 253
Conner, W.E. 263
Cooter, R.J. 247
Corbet, S.A. 115
Cymborowski, B. 409
Davenport, A.P. 269
David, C.T. 377
Delbecque, J.P. 409
Denlinger, D.L. 361
Evans, P.D. 269
Ferguson, A.W. 387
Free, J.B. 387
Friend, W.G. 395
Gabbiani, G. 239
Gäde, G. 229
Galun, R. 403
Gewecke, M. 247
Giebultowicz, J.M. 409
Gillett, J.D. 139
Godden, D.H. 275
Graham, D. 275
Greenfield, M.D. 87
Groeneveld, A. 437
Hansen, K. 9
Harris, M.O. 145
Harrison, G.D. 49
Havukkala, I.J. 157
Haynes, K.F. 287
Hefetz, A. 175
Hilliard, R.A. 165, 417
Hodgson, C.J. 207
Itagaki, H. 263
Jeanne, R.L. 65
Kammer, A.E. 19
Kastberger, G. 297
Keeley, L.L. 165, 417
Kennedy, J.S. 157
Kimura, M.T. 425
Kinnamon, S.C. 19
Kiorpes, A.L. 19
Kronenberg, S. 175
Kumar, H. 77
Lambin, M. 181
Leoncini, P. 239
Lehrer, M. 447
Liske, E. 29
McEvoy, P.B. 191
Merritt, D.J. 39
Miller, J.R. 145
Mitchell, B.K. 49, 57
Mohren, W. 29
Mordue, W. 197
Morgan, P.J. 197
Mustafa, T.M. 207
Oren, N. 403
Pérez, D. 433
Phelan, P.L. 365
Post, D.C. 65
Prager, J. 107
Rence, B.G. 215
Rice, M.J. 39
Riddiford, L.M. 315
Rozas, R. 433
Sabelis, M.W. 437
Sasaki, M. 315
Saxena, K.N. 77
Schrader, R. 459
Simpkins, J.R. 387
Spangler, H.G. 87
Srinivasan, M.V. 447
Stoffolano, J.G., Jr 395
Sutcliffe, J.F. 57
Szentesi, Á. 329
Takessian, A. 87
Tanaka, S. 97
Taylor, F. 459
Theiss, J. 107
Traynier, R.M.M. 465
Unwin, D.M. 115
Vermaat, J.E. 437
Willis, M.A. 341, 365
Woodhead, A.P. 473
Zecharia, M. 403
Ziegler, R. 229

Origination and printing by Adlard & Son Ltd, Dorking, Surrey